AF

PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPELLANTS:	Akkerman et al.	EXAMINER:	Thanh T. Nguyen
SERIAL NO.:	10/701,183	ART UNIT:	2813
FILED:	November 4, 2003	CASE NO.:	LU05004USU (Akkerman 1-51)

CONFIRMATION NO.: 5025
ENTITLED: DEVICES HAVING LARGE ORGANIC SEMICONDUCTOR CRYSTALS AND METHODS OF MAKING THE SAME

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Jay M. Brown

Date: December 29, 2007

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

APPELLANTS' REPLY BRIEF ON APPEAL

An Examiner's Answer in this appeal was mailed on October 30, 2007. This Reply Brief is being timely filed within the statutory two-month filing deadline.

Purpose for Filing Reply Brief

The Examiner's Answer does not state any new ground of rejection, and the status of the claims as stated in Appellants' Brief on Appeal has not changed. However, this Reply Brief is filed in reply to arguments stated in the Examiner's Answer. Appellants submit this Reply Brief to supplement, and to be taken together with, Appellants' Brief on Appeal filed on July 29, 2007.

Reply to Arguments in Examiner's Answer

Precursors. Claims 1 and 19 both recite, in part, "...dielectric layer being formed from a precursor composition including a member selected from the group consisting of: naphthalenes, styrenes, phenols, benzenes, and cresols..." Any polymer scientist having ordinary skill in the art understands that "naphthalenes, styrenes, phenols, benzenes, and cresols" are classes of chemical entities that each has particular types of chemical structures, and that each of these classes of chemical entities must include the aromatic moieties that are required by the definitions for their respective chemical structures. Any polymer scientist having ordinary skill in the art further understands that polymerization of "naphthalenes, styrenes, phenols, benzenes, and cresols" generally conserves the aromatic rings from such precursors, and often at least partially conserves aliphatic portions of the aromatic moieties of these precursors. The precursors selected from naphthalenes, styrenes, phenols, benzenes, and cresols are composition ingredients which are then polymerized. Polymerization of these composition ingredients does not transform them into "process steps." By their respective chemical structures and by the commonly known or at least predictable structures resulting from their polymerization, these precursors are composition ingredients that define the resulting polymerized structure of the dielectric layer. The chemical compositions of the dielectric layer precursors are structural

elements of claims 1 and 19. Katz fails to disclose and fails to suggest, in any portion pointed to by the Examiner's Answer, a "...dielectric layer being formed from a precursor composition including a member selected from the group consisting of: naphthalenes, styrenes, phenols, benzenes, and cresols..." For this reason alone, Katz fails to disclose and fails to suggest either of independent claims 1 and 19.

Poly(imides) and poly(methacrylates). Katz states "polyimides and poly(methacrylates)" at col. 3, lines 15-17 as pointed to by the Examiner's Answer at page 12. The chemical structure of the imide moiety is -- ((C=O) – N(R) – (C=O)) --. The imide moiety itself is not aromatic. Although polyimides can be either aliphatic or aromatic, the Examiner's Answer has not pointed to any portion of Katz that teaches the use of an "aromatic polyimide". The chemical structure of methyl methacrylate is H_2C=C-(CH_3) – COO – CH_3. The chemical structure of poly (methyl methacrylate) is -- (H_2C-(C-CH_3) – (COO-CH_3)) --. Poly (methyl methacrylate), an example of a common "poly(methacrylate)", is not aromatic. The Examiner's Answer has not pointed to any portion of Katz that teaches the use of an "aromatic poly(methacrylate)". Contrary to the Examiner's Answer at page 12, Katz does not teach "...the chemical surface structure of polyimides that contain aromatic carbon rings" in the Table at cols. 5-10. Katz there merely teaches "polyimide"; and all of the affinity – defining materials that are listed in the Table are aliphatic. The Examiner's Answer also cites, at page 12, Katz's teaching at col. 4, lines 40-43 that "...the attachment of a fluorocarbon chain to a species will tend to decrease the solubility or miscibility of that species with another species to which an aromatic ring is attached"; (emphasis supplied). The phrases "a species" and "that species" both refer to the "surface". The "another species" to which an "aromatic ring is attached" refers to a semiconductor that is applied onto the

"surface". Hence, in that passage Katz teaches the application of a fluorocarbon chain to a "surface" to repel attachment of "another species" - an aromatic composition; and the Table at cols. 5-10 reports numerous examples of that same teaching. The "another species to which an aromatic ring is attached" to which Katz there refers is the semiconductor that is applied onto the "surface" – not, as asserted by the Examiner's Answer at page 12, the "surface" itself. The Examiner's Answer still has not pointed to any portion of Katz that discloses or suggests that the "surface" specified in the first column of the Table at cols. 5-10 may be aromatic. The Examiner's Answer provides no support for its statement at page 14 that "polyimides or polymethacrylates is inherently formed from precursor containing benzenes, or phenols or naphthalenes or styrenes or cresols in the art." Any polymer scientist having ordinary skill in the art knows that a "precursor containing benzenes, or phenols or naphthalenes or styrenes or cresols in the art" would have to contain a "precursor" for "polyimides or polymethacrylates" in order to "form" a "polyimide or polymethacrylate" upon polymerization. The definitions of the terms "benzenes", "phenols", "naphthalenes", "styrenes" and "cresols" do not inherently include precursors to a polyimide having the structure, -- ((C=O) – N(R) – (C=O)) --, or a poly(methacrylate) having the structure -- (H_2C-(C-CH_3) – (COO-R)) --; (where R = CH_3 in the case of poly(methyl methacrylate)). The Examiner's Answer has not pointed to any portion of Katz that discloses or suggests that the polyimides or poly(methacrylates) taught in Katz are formed from such precursors.

Dielectric layer composition. Independent claim 28 recites, in part, "said dielectric layer including a polyphenol, a polystyrene, a poly(4-vinylphenol-co-2-hydroxyethyl methacrylate), or a poly(phenoxyethyl methacrylate)." As indicated by the prefix "poly", these materials are

polymers that constitute ingredients in the composition of the dielectric layer after it has been polymerized. This recitation is a statement of the chemical structure of the dielectric layer. It is not a statement regarding chemical structures of "precursors" for making the dielectric layer, and it is not a process limitation. The chemical composition of the dielectric layer, so recited in claim 28, is a structural limitation of claim 28. The argument at pages 9, 19 and 23 of the Examiner's Answer regarding "a precursor composition of the group consisting of polyphenol..." is irrelevant to patentability of claim 28, because claim 28 includes no such recitation. See, likewise, the argument at page 23 of the Examiner's Answer regarding claim 21. The Examiner's Answer asserts at pages 17-18 that it would be obvious to substitute the poly-4-vinylphenol-co-2-hydroxyethylmethacrylate disclosed by Klauk for the "poly(methacrylates)" disclosed by Katz. The Examiner's Answer has not pointed to any particular portion of Katz that discloses or suggests the use of "aromatic poly(methacrylates)". The Examiner's Answer provides no support for its conclusory statement at page 18 that "Katz's polymethacrylates is similar/identical to Klauk's poly(4-vinylphenol-co-2-hydroxyethylmethacrylate)." The Examiner's Answer has not pointed to any portion of Katz that discloses or suggests as recited in claims 1 and 19, "a dielectric layer comprising a surface, a portion of said surface having exposed aromatic groups". Hence, no motivation has been established for one of ordinary skill in the art to substitute Klauk's aromatic poly(4-vinylphenol-co-2-hydroxyethylmethacrylate) for Katz's "poly(methacrylates)".

Conclusion

Katz, Klauk, Mushrush, and Katz et al., taken alone or in combination, fail to disclose and fail to suggest a device having all of the structural elements recited in any of Appellants' claims. Appellants therefore request a reversal of the final rejections of these claims and allowance of this patent application.

Respectfully submitted,

By _____
Attorney for Appellants
Jay M. Brown, Reg. No. 30,033
Phone: (919) 522-0312
Fax: (919) 267-5685

The Law Office of Jay M. Brown
6409 Fayetteville Rd., Ste. 120-306
Durham, NC 27713

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